REVIEWS

TRAITÉ DE PISCICULTURE. *By Marcel Huet. Third edition. Ch. De Wyngaert, Bruxelles. 1960. 369 pp., 280 figs. $9.00.*

Traité de Pisciculture by Dr. Marcel Huet, Director of the Research Station of Waters and Forests of the Belgian Ministry of Agriculture and Professor at the University of Louvain, was first published in 1952 and has now reached its third edition. This alone is sufficient evidence that the book has become a landmark in its field. It is known for its comprehensiveness, logical presentation, clarity of writing, and excellent illustrations. European engraving is outstanding compared with ours, and the quality of the figures in Dr. Huet's book is not disappointing. Profuse photographs and line drawings are reproduced exceptionally well.

The *Traité de Pisciculture* can be described in general terms as a handbook patterned after the German style. Its treatment is also dominantly European. Very little attention is given fish culture in North America or other parts of the world, with the exception of an extremely interesting account of *Tilapia* culture in tropical Africa. Dr. Huet represented the Belgian government in the Congo on several fish-cultural missions before the independence of that country.

The third edition has been changed very little from the second. The two most important differences are found in the revisions of the sections dealing with *Tilapia* culture and the control of aquatic vegetation. A brief review of the contents is given for those unfamiliar with the book. The details of construction and management of ponds is followed by chapters on natural and artificial feeding, the culture of carp, trout, pike, coregonines, bass, and eels. The last three chapters deal with productivity and pond stocking, maintenance and improvement of ponds, and holding and transport of fish. North Americans will find the chapter on carp culture especially interesting. Huet reviews the major European types of culture which have reached unusual finesse as a result of generations of experience in breeding and rearing carp for food.

Each topic is discussed thoroughly. The chapter on trout culture may be taken as an example. The requirements of pond culture of trout are given; the life histories of brook, brown, and rainbow are briefly discussed; and a detailed treatment is presented of culture from the egg to the end-product which includes incubation, hatching, and rearing the young with and without supplemental feeding. There is a sprinkling of ideas about pond ecology, but as a whole the book can be classed as a manual of tested methods of European fish culture. No emphasis is placed on fish diseases. There is no index, but the table of contents is very complete and sufficient for easy reference.

Some may wish to add this reference to their personal collection, but all should recommend it for purchase by their most convenient library. Graduate students should by all means be encouraged to read the book in preparation for their French examination. They will learn a great deal and discover that the writer is a master of logical and concise writing.

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LIVING FISHES OF THE WORLD. *By Earl S. Herald. Doubleday, Garden City, N. Y. 1961. 304 pp., 155 halftones, 145 full-color illustrations. $12.50.*

This is by far the best compendium we have seen of fish illustrations. The book (8½- by 11-inch pages) is printed on high-quality gloss paper. Illustrations are made as large as possible by "bleeding" off the edge of the page, as well as by spreading many onto two pages. Action pictures of fish in natural surroundings are numerous and of extraordinary quality.

As in any attempt to cover such a large subject in small compass, only the most salient and interesting life-history points are discussed for each family. Written in a style easily understood by the layman, the text is, at the same time, so full of facts about each group that one finds it hard to set the book aside. The price is not high considering the quality and number of illustrations. The phylogenetic arrangement and index to both common and scientific names render it valuable as a general reference. This book is highly recommended for your library.

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FISHERY MANAGEMENT. *By R. S. Fort and J. D. Brayshaw. Faber and Faber, London. 1961. 398 pp., 82 figs., 17 pl. 45s.*

The title of this book is rather misleading; a more accurate title would be *Management of British Streams with Special Emphasis on Salmon.* The audience to which this book is apparently addressed scarcely exists in the United States. The book is far too detailed and specific for the lay reader and lacks the technical accuracy required by the scientist. The audience appears to be the large number of enthusiastic amateur sportsmen who can afford the luxury of salmon angling. Examples of technical errors: on page 13, "In theory a pond may produce enough fish food to support 100 fish weighing 1 lb. each or 400 fish weighing ¼ lb. each," and on page 47, "A. Salmonids. This family includes salmon, sea trout, brown trout, rainbow trout, char, whitefish, grayling and sparling [smelt]." On page 218 the Deep Channel Fishpass which his diagram shows as the deep-baffle type used in the United States and Canada is described as being adapted for ". . . very high obstructions. . . ."

A large share of the book is devoted to British fresh-water fishery laws and administration, a non-technical discussion of stream pollution, methods of stream improvement, and diagrams and pictures of many bizarre means of catching a salmon, perhaps the oddest being a large wicker funnel so long and narrow at the small end that the entering salmon becomes jammed and cannot back out. The style is entertaining, and if you wish to build a small footbridge or a fishing shelter, the details are given. The droll style is best illustrated on page 251, ". . . when cutting through a branch from a ladder, the cut should be made on the side of the ladder away from

the trunk." For British anglers the detailed material on the functioning of the River Boards should be rewarding.

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BACTERIAL ACTIVITY IN SEDIMENTS OF SHALLOW MARINE BAYS. *By Carl H. Oppenheimer.* In *Geochimica et Cosmochimica Acta, Vol. 19, pp. 244–260, 1960. 8 figs., 4 tables, Pergamon Press Ltd., London.*

In addition to briefly discussing shallow bay sediments this paper presents a review of some of the pertinent literature concerning ecological aspects of bacteria in the marine environment, and more significantly it directly and indirectly exposes some of the difficult and intricate problems associated with marine ecological investigations and understanding. In his discussion of organic matter, source, and diagenesis in the bay environment the author points out, possibly too briefly, some of the factors involved in the distribution of organic matter in sediments, *i.e.*, living organisms, particulate material, and scavenging of dissolved material. This latter point should be stressed since such a mechanism may well be a major contributing factor for organic distribution where appreciable available surface area is present as in fine-grained sediments.

The difficult problems concerning absolute bacteria counts are also discussed. All individuals investigating ecological systems with respect to sediments must be aware of these limitations which are due to technique difficulties.

Concerning the rate of decomposition of organic matter, the writer contends that organic decomposition is more rapid in sands than in clays due to the more abundant types of bacteria present in sands. In this statement we find one of the anomalies or conflicts related to sediment organic geochemistry or biogeochemistry. Particle size, mineralogy, organic matter, bacteria, decomposition rates, etc., may all be considered separate for some purposes yet their interrelationship must be equally understood before we can arrive at an understanding of the operative ecological situation. This conflict is further demonstrated when the author discusses bacteria and particle size.

The writer also points out the problem of organic material present and organic material available. This is a vital concept in that the mere presence of organic material does not of necessity mean the presence of a nutrient source. The pH and redox potential discussion also briefly demonstrates the complexity of the situation. Both are extremely difficult to determine with a uniform degree of usefulness. There can well exist an appreciable difference between the values obtained by measurement and the actual operative conditions.

In summary this paper is quite valuable in that it attempts to point out the severe difficulties which are inherent in our investigations of sedimentary chemistry and biochemistry. It is necessary for the ecologist to absorb the lessons learned or unlearned by the problems posed in this paper.

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